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FENTAL CARE COMPOSITE UNIT STUDY: Executive Summary

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) <b>The purpose of the DECCUS Project was to develop a dental procedure weighting system for use in establishing a Dental Care Composite Unit (DCCU) of work measurement. A pilot study indicated that existing dental workload reporting systems did not adequately describe the activities of Army dentists. Phase II was instituted to develop a weighted dental procedure workload reporting system. The list of tasks/procedures used in the study was derived from a number of sources including the American Dental Association, the California</b>		

State Department of Health, and input from many dental officers within the Army. ~~Data collection was initially from five installations with additional data input from four other installations.~~ Final values for each of the tasks were determined using accepted statistical methods, including descriptive statistics and regression analysis. It was concluded that: (a) the final task/procedure list developed for the study is descriptive of the clinical services rendered within the Army Dental Care System; (b) a valid weighting factor has been developed for each of the dental tasks/procedures; (c) the task/procedure list can be consolidated into DD Form 477, making the new list immediately useful; (d) the study has developed a dental workload reporting method which is more accurately descriptive of Army dental practice than the method currently in use; and (e) the calculated mean time value for each task/procedure can be used as DCCU values for workload measurement. The DOD adoption of modified American Dental Association Dental procedure codes for the Uniform Chart of Accounts dental workload accounting system negates the need for future development of a DCCU using the DECCUS approach, therefore, this project should be considered completed.

# SUMMARY

Various management indicators relating to the utilization of dental resources are in vogue. The system in use in the Army today makes attempts at evaluating efficiency, productivity, and cost effectiveness almost futile. Comparisons among the three services likewise are questionable and generally unreliable because of variability in recording and reporting procedures. The purpose of the DECCUS project was to develop a dental procedure weighting system appropriate for use in establishing a Dental Care Composite Unit (DCCU) of work measurement. In addition, the DCCU system could serve as a prototype for Army-wide and tri-service utilization. Such a system would provide a significant improvement in the manner in which resource utilization is assessed. A pilot study indicated that existing dental workload reporting systems did not adequately describe the activities of Army dentists. Phase II was initiated to develop a weighted dental procedure workload reporting system. The data collected was classified into three categories: (1) provider type, (2) type of tasks performed, and (3) time required for tasks and appointments. A total of nine installations participated in the study on a formal basis and supplemental data was solicited from numerous dentists throughout the Army. Task times were calculated for each task/procedure using mathematically accepted methods and statistical analyses. Statistical support was obtained from the Systems Division, Health Care Systems, Statistical Element, Directorate of Management Information Systems, HSC. It was concluded that: (1) the final task/procedure list developed for the study is descriptive of the clinical service rendered within the Army Dental Care System; (2) a valid weighting factor has been developed for each of the dental tasks/procedures; (3) the task/procedure list can be consolidated into DD Form 477, making the new list immediately useable; (4) a dental workload reporting method has been developed which is far more descriptive of Army dental practice than the currently employed method of reporting dental output; (5) the mean time values for each task/procedure can be used in computing DCCU values for workload measurement; and (6) the formal development of a dental composite unit of work measurement should not proceed (Phase III, DECCUS) using the data and rationale presented in this report because of the adoption by DOD of the American Dental Association coding process for use with the Dental Uniform Chart of Accounts.

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## 1. BACKGROUND.

a. Various management indicators relating to the utilization of dental resources are in vogue. Many of the indicators are archaic and are of minimal value in assessing managerial techniques and the efficiency of the application of resources to patient care. Consequently, attempts at evaluating cost effectiveness and making comparisons among the myriad of activities are almost futile. This severely limits the ability of staff elements in Headquarters, US Army Health Services Command (HSC) to develop meaningful policy and guidance on resource management and provides little incentive for local Directors of Dental Services (DDS) to become effective managers.

b. HSC receives quarterly reports from each dental activity (DENTAC) under HSC. The reporting of dental procedures on the DD Form 477 (see Appendix A) as is presently done and the costing of these procedures provides nebulous information that is often subjective in nature and easily misinterpreted by laymen and administrators. The US Air Force (USAF) system of weighting dental procedures by means of an Estimated Procedure Value (EPV) is an attempt to equitably portray how the DDS is applying his resources. Unfortunately, the 46 dental procedures reported on the DD Form 477 do not adequately reflect the range of services provided by the modern military dental care system. Many treatments not directly described by one or more of the 46 listed procedures are incorporated and inaccurately reported on the 477 in an attempt to more completely record the actual treatment provided patients. To promote broader reporting and to standardize procedures, HSC Dental Bulletin #3 was formulated and disseminated to all Dental Services. In spite of these efforts to circumvent inadequacies in the system as well as other efforts to accurately evaluate what is being accomplished, the present system cannot stand "the light of day" under close scrutiny. The glaring shortcoming is that too many dental procedures cannot be reported and, therefore, cannot be accurately accounted for. Even when reported under a pseudonym on a somewhat related line of the DD Form 477, any weights assigned are not valid because they were developed for the actual procedures on the line item. A reliable system of weights that include a full range of services is not in use by any element of Department of Defense (DOD) for universal reporting.

c. This study was initiated in response to a request from the Director of Dental Services, US Army Health Services Command.

## 2. PURPOSE AND OBJECTIVES.

a. The overall purpose of the project was to develop and test a dental care composite unit of work measurement.

b. The objectives of the study were:

(1) To determine if an existing dental workload reporting system could be used to develop a DCCU.

(2) If an existing system could not be found, to develop and test a weighted dental procedure reporting system descriptive of current Army dental practice.

(3) To develop a methodology for the formulation of a DCCU of work measurement.

### 3. METHODOLOGY.

a. The general approach was to evaluate prospective workload reporting for applicability to the Army dental care delivery system. The Department of Health, State of California was found to have an operational cost accountability system in its hospitals for use in evaluating the management of the delivery of medical and dental services. The system utilized a series of relative value units (RVU) which included a more extensive list of procedures that was currently in use by the Army. Although this system appeared to be appropriate for application to the Army dental care delivery system, pilot testing revealed inherent shortcomings which could not be corrected.

b. The next phase of the study included the generation of an extensive dental task/procedure listing that would describe the activities performed by dental officers as they practiced military dentistry and would also indicate the completion of major treatment accomplishments.

The task/procedure list used for this project was derived from several existing task and/or procedure lists reviewed by project officers and supplemented by input from several dental officers representing all specialty areas of practice. The task approach used by Dr. Marvin Marcus, in studies conducted at the School of Dentistry, University of California at Los Angeles, served as the guide for the list formulation. In addition, procedure lists published by the American Dental Association were used along with those used by the California Department of Health and from experience obtained in a previous HCSD study. During data collection, the participants had the option of and were encouraged to, indicate inadequacies in the task list and suggest modifications.

The self-reported data included along with frequency of use of the task/procedure, documentation of the beginning and end times for appointments and tasks/procedures as well as identifying the level of the care provider. A two week data collection at five installations was conducted. Analysis and interpretation of these data indicated a severe shortage in oral surgery and periodontic procedures. A second data collection effort at four different sites was launched to obtain additional volume of data in these areas. However, even with the second effort there was insufficient data for formulation of time based weights in oral surgery and periodontics. This problem was solved by using time estimates coupled with actual data for development of weighting factors.

#### 4. FINDINGS.

##### a. Phase I.

(1) A review of existing operational dental reporting systems indicated that only California Relative Value Unit Systems appeared to adequately describe the services actually delivered by Army dental providers.

(2) The California RVU dental treatment reporting system with its 126 line items is more descriptive of the dental treatment actually performed by providers than the 46 line item system currently used by the US Army Dental Corps.

(3) The California RVU system is a more useful descriptor of cost per dental treatment than the dental treatment reporting system currently used by the Army.

(4) The 126 line item RVU system does not adequately describe all of the dental treatment services provided by the Army dental officers and this system is not appropriate or adequate for use in the development of a Dental Care Composite Unit.

(5) The use of a coded expanded dental treatment procedure reporting system is acceptable to local level dental managers and providers.

##### b. Phase II.

(1) Based on the users tests and reviews conducted during this project, the task/procedure list is considered descriptive of the clinical services rendered within the Army Dental Care System.

(2) A time/provider based weighting factor has been developed for each dental task/procedure listed.

(3) The task/procedure list developed in this project can be consolidated into the 46 line items listed on DD Form 477.

(4) The task/procedure list developed in this project cannot be meaningfully converted to the modified ADA codes.

(5) A dental workload reporting method has been developed which is far more descriptive of Army dental practice than the currently employed method of reporting dental output.

(6) The mean time values for each task/procedure can be used as the basis for development of DCCU values for workload measurement.

c. Phase III of DECCUS should not be initiated in view of the adoption of the modified American Dental Association Dental Procedure



Codes as the basis for the Uniform Chart of Accounts Dental Workload Reporting System.

d. The weighting factors developed during DECCUS were useful in the development of a weighting system for the UCA dental workload system. These weights were termed Composite Time Values (CTV) and assigned a time based weight to each proposed UCA dental procedure.

## 5. CONCLUSIONS.

a. The objectives of Phase I and II have been met.

b. The task/procedure list and accompanying weighting factors cannot be directly applied and are not compatible with the ADA modified dental treatment codes.

c. The DECCUS Phase provided valid data for use in development of comparative time values for the UCA dental reporting system.

## 6. RECOMMENDATION.

a. In view of the acceptance of the DOD modified codes for use in Uniform Chart of Accounts Dental Reporting System, no further development of a DCCU using the DECCUS reporting system is recommended, therefore, the study should be concluded.

b. The weights developed for dental tasks/procedures during the conduct of DECCUS should be considered valid and utilized where applicable in projected revalidation of the UCA Composite Time Values.

## 7. REFERENCES.

Parker, W. A., and Burnes, G. P. Dental Care Composite Unit Study: Phase I. Relative Value Unit Pilot Study, Health Care Studies Division, Interim Report, March 1977.

Parker, W. A.; Williams, D.; and Mayotte, R. V. Dental Care Composite Unit Study: Phase II. Development of a Time-Provider Based Dental Procedure Weighting System, Health Care Studies Division, Report: HCSD 78-006, August 1978.

APPENDIX A  
DENTAL SERVICE REPORT  
DD Form 477

<input type="checkbox"/> ARMY <input type="checkbox"/> NAVY <input type="checkbox"/> AIR FORCE	REPORTING FACILITY AND LOCATION		PERIOD COVERED
	Installation Clinic Installation Number _____ Team (Dentist) Number _____		

**PART I - DENTAL PROCEDURES**

	ARMY	NAVY-MARINE	AIR FORCE	DEPENDENTS	ALL OTHER	TOTAL	
	A	B	C	D	E	F	G
<b>A. OPERATIVE AND CROWN AND BRIDGE</b>							
1. AMALGAM (One surface)							
2. AMALGAM (Two or more surfaces)							
3. BASE INTERMEDIATE							
4. RESIN							
5. ROOT CANAL FILLING (Tooth)							
6. IMPLICATE							
7. TEMPORARY OR SEDATIVE FILLING							
8. Filling Polished							
9. GOLD (Inlay, full)							
10. BRIDGE							
11. GOLD CROWN (All types)							
12. RESIN CROWN							
13. RESIN CROWN WITH METAL							
14. OTHER CROWNS							
15. CROWN OR BRIDGE REPAIR							
16. Casts							
<b>B. PROSTHODONTICS</b>							
17. DENTURE, RECONST., RELINE, REPAIR							
18. FULL DENTURE							
19. PARTIAL DENTURE							
20. OTHER MAXILLOFACIAL APPLIANCES							
21. Orthodontic Appliance							
<b>C. ORAL SURGERY</b>							
22. ABSCESS, INCISION AND DRAINAGE							
23. ALVEOLECTOMY							
24. APICOMECTOMY							
25. BIOPSY							
26. CYSTECTOMY							
27. FRACTURE MANDIBLE REDUCTION							
28. FRACTURE MAXILLA REDUCTION							
29. FRACTURE (Other) REDUCTION							
30. ROOT RESIDUAL - REMOVAL							
31. TOOTH REMOVAL							
32. TUMORS (All types) EXCISION							
33. Cellulitis							
34.							
35.							
36.							
<b>D. PERIODONTICS AND ORAL HYGIENE</b>							
37. EQUILIBRATION							
38. GINGIVECTOMY							
39. GINGIVITIS OR STOMATITIS TREATMENT							
40. PROPHYLAXIS							
41. SCALING (Pericoronal)							
42. CARIES PREVENTION TREATMENT							
43. Preventive Dentistry Counseling							

DD FORM 1 OCT 53 477

PREVIOUS EDITIONS ARE OBSOLETE.

**PART I - DENTAL PROCEDURES (Continued)**

	ARMY A	NAVY - MARINE B	AIR FORCE C	DEPEND- ENTS D	ALL OTHER E	TOTAL F	G
<b>E. RADIOLOGICS</b>							
46. INTRA-ORAL ROENTGENOGRAM							
48. EXTRA-ORAL ROENTGENOGRAM							
<b>F. OTHER</b>							
49. EXAMINATIONS (Types 1, 2, and 3)							
47. ORTHODONTIC TREATMENT							
49. POST OPERATIVE TREATMENT							
49. Perio Screening Examination							
49. Hours of Operation							
51. TOTAL PROCEDURES LINES 1 - 50							
52. TOTAL PATIENTS TREATED							

**PART II - LABORATORY DATA**

NUM-54

**A. TEETH REPLACED IN ITEMS 10 AND 19, PART I**

**B. PROSTHETIC APPLIANCES PROCESSED (Name under Part I, Section B)**

1. ENTIRELY IN REPORTING FACILITY

2. PARTLY IN OTHER FACILITY (Name)

3. ENTIRELY IN OTHER FACILITY (Name)

**C. CHROME-COBALT OR OTHER NON-PRECIOUS METAL APPLIANCES**

1. CAST LOCALLY DURING REPORTING PERIOD

2. MAXIMUM MONTHLY POTENTIAL OUTPUT

**PART III - CLASSIFICATION OF ACTIVE DUTY PERSONNEL (At end of month)**

	MILITARY STRENGTH SERVED		NUMBER CLASSIFIED	CL. 1	CL. 2	CL. 3	CL. 4	CL. 5
	REPORTING FACILITY	OTHER						
1. ARMY								
2. NAVY-MARINE								
3. AIR FORCE								
4. TOTAL								
5. GRAND TOTAL								

**PART IV - REMARKS**

**TEAM CONFIGURATION**

Number of Dental Officers \_\_\_\_\_

Number of Dental Assistants \_\_\_\_\_

Number of Dental Therapy Assistants \_\_\_\_\_

Number of Dental Treatment Rooms (Chairs) \_\_\_\_\_

Check one: Open Bay \_\_\_\_\_

Individual Room(s) \_\_\_\_\_

Name and Rank of Dental Officer \_\_\_\_\_

Name and Rank/GS Grade of each DTA \_\_\_\_\_

DATE	TYPED OR PRINTED NAME AND GRADE	SIGNATURE
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